

**PRE-PACKAGED ABSORBENT ARTICLE AND  
SUN PROTECTION ACCESSORIES ARRANGEMENT**

Background of the Invention

[0001] The present invention relates generally to absorbent articles intended for personal wear, and more particularly to such absorbent articles which are typically suitable as swimwear and are pre-packaged with sunscreen and other swim accessories.

[0002] Absorbent articles such as swim pants, diapers, training pants, incontinence garments and the like have found widespread use in the areas of adult care, infant care and child care. Disposable swim pants, for example, are typically worn by children that have not completed toilet training and are particularly suitable for wear during swimming. Absorbent articles conventionally comprise a liquid permeable body-facing liner, a liquid impermeable outer cover, and an absorbent structure (also referred to as an absorbent body or absorbent core) formed separate from the outer cover and liner and disposed therebetween for taking in and retaining liquid (e.g., urine) exuded by the wearer. Such articles are generally sold or otherwise distributed in multiple article packages.

[0003] The potentially harmful effects of overexposure to ultraviolet (UV) radiation, e.g., from the sun, are well known. For outdoor activities such as swimming, it has become of increasing importance for caregivers to take various accessories (in addition to absorbent articles such as swim pants) to the pool, beach, lake, etc. to use in providing protection for children against UV radiation. Sunscreen compositions, UV indicators (which detect and/or monitor exposure to UV radiation), sunglasses, hats, umbrellas, and the like are all known to be useful sun protection accessories. However, with so many accessories

available, some or all of these accessories are often forgotten or inconvenient to purchase separately.

[0004] There is a need, therefore, for a way to package absorbent articles and sun protection accessories together for distribution as a single unit, such as at the point of sale, to reduce the risk of forgetting to bring such articles and accessories to a swimming locale.

#### Summary of the Invention

[0005] In general, a pre-packaged absorbent article and sun protection accessories arrangement according to one embodiment of the present invention comprises an absorbent article for personal wear, a sunscreen carrier containing a sunscreen composition, and at least one packaging element. The absorbent article, the sunscreen carrier and the packaging element are arranged relative to each other for distribution together as a single unit.

[0006] Other features of the invention will be in part apparent and in part pointed out hereinafter.

#### Brief Description of the Drawings

[0007] Figure 1 is a side perspective of an article of the present invention shown in the form of a pair of swim pants broken open on one side to show an interior of the pants;

[0008] Figure 2 is a bottom plan view of the swim pants of Figure 1 with the pants in an open, unfolded and laid flat condition, and showing the surface of the pants that faces away from the wearer;

[0009] Figure 3 is a top plan view similar to Fig. 2 showing the surface of the swim pants that faces the wearer when worn and with portions cut away to show underlying features;

[0010] Figure 4 is a side elevation of one embodiment of an absorbent article and sun protection accessories arrangement of the present invention;

[0011] Figure 5 is a perspective thereof;

[0012] Figure 6 is a side elevation of a second embodiment of an arrangement of the present invention;

[0013] Figure 7 is a side elevation of a third embodiment of an arrangement of the present invention, with a portion shown in section to reveal internal construction;

[0014] Figure 8 is a side elevation of a fourth embodiment of an arrangement of the present invention;

[0015] Figure 9 is a side elevation of a fifth embodiment of an arrangement of the present invention, with a wrap shown in section to reveal internal construction;

[0016] Figure 10 is a side elevation of a sixth embodiment of an arrangement of the present invention, with a portion broken away to reveal internal construction;

[0017] Figure 11 is a perspective of a seventh embodiment of an arrangement of the present invention;

[0018] Figure 12 is a perspective of an eighth embodiment of an arrangement of the present invention;

[0019] Figure 13 is a side elevation of a ninth embodiment of an arrangement of the present invention;

[0020] Figure 14 is a side elevation of a tenth embodiment of an arrangement of the present invention;

[0021] Figure 15 is a perspective of an eleventh embodiment of an arrangement of the present invention; and

[0022] Figure 16 is a perspective of a twelfth embodiment of an arrangement of the present invention.

[0023] Corresponding reference characters indicate corresponding parts throughout the several views of the drawings.

Definitions

[0024] Within the context of this specification, each term or phrase below includes the following meaning or meanings:

[0025] "Attached" refers to the joining, adhering, connecting, bonding, or the like, of two elements. Two elements will be considered to be attached to one another when they are attached directly to one another or indirectly to one another, such as when each is directly attached to intermediate elements.

[0026] "Hydrophilic" describes fibers or the surfaces of fibers which are wetted by aqueous liquids in contact with the fibers. The degree of wetting of the materials can, in turn, be described in terms of the contact angles and the surface tensions of the liquids and materials involved. Equipment and techniques suitable for measuring the wettability of particular fiber materials or blends of fiber materials can be provided by a Cahn SFA-222 Surface Force Analyzer System, or a substantially equivalent system. When measured with this system, fibers having contact angles less than 90 degrees are designated "wetable" or hydrophilic, and fibers having contact angles greater than 90 degrees are designated "nonwetable" or hydrophobic.

[0027] "Layer" when used in the singular can have the dual meaning of a single element or a plurality of elements.

[0028] "Liquid impermeable," when used in describing a layer or multi-layer laminate means that liquid body waste, such as urine, will not pass through the layer or laminate, under ordinary use conditions, in a direction generally perpendicular to the plane of the layer or laminate at the point of liquid contact.

[0029] "Liquid permeable" refers to any material that is not liquid impermeable.

[0030] "Meltblown" refers to fibers formed by extruding a molten thermoplastic material through a plurality of fine, usually circular, die capillaries as molten threads or filaments into converging high velocity heated gas (e.g., air) streams which attenuate the filaments of molten thermoplastic material to reduce their diameters. Thereafter, the meltblown fibers are carried by the high velocity gas stream and are deposited on a collecting surface to form a web of randomly dispersed meltblown fibers. Such a process is disclosed, for example, in U.S. Patent 3,849,241 to Butin et al.

[0031] "Non-woven" and "non-woven web" refer to materials and webs of material which are formed without the aid of a textile weaving or knitting process.

[0032] "Superabsorbent" refers to a water-swellable, water-insoluble organic or inorganic material capable, under the most favorable conditions, of absorbing at least about fifteen times its weight and, more desirably, at least about thirty times its weight in an aqueous solution containing 0.9 weight percent sodium chloride. The superabsorbent materials can be natural, synthetic and modified natural polymers and materials, or a combination of such materials. In addition, the superabsorbent materials can be inorganic materials, such as silica gels, or organic compounds such as cross-linked polymers.

[0033] "Thermoplastic" describes a material which softens when exposed to heat and which substantially returns to a non-softened condition when cooled to room temperature.

#### Detailed Description of the Preferred Embodiments

[0034] Referring now to the drawings and in particular to Fig. 1, an absorbent article useful in the arrangement of the present invention is shown in the form of children's swim

pants and is indicated in its entirety by the reference numeral 20. The swim pants 20 may or may not be disposable, which refers to articles that are intended to be discarded after a limited period of use instead of being laundered or otherwise conditioned for reuse. It is understood that the arrangements of the present invention may include absorbent articles other than swim pants 20, including but not limited to diapers, training pants, feminine hygiene products, incontinence products and other personal care or health care garments without departing from the scope of the present invention.

[0035] The pair of swim pants 20 is illustrated in Fig. 1 with the pants broken open along a side seam. The pair of swim pants 20 comprises longitudinal end regions, otherwise referred to herein as a front waist region 22 and back waist region 24, and a center region, otherwise referred to herein as a crotch region 26, extending longitudinally between and interconnecting the front and back waist regions. The pants 20 also has an inner surface 28 adapted (e.g., positioned relative to the other components of the pants 20) for contiguous relationship with the wearer, and an outer surface 30 opposite the inner surface. The front and back waist regions 22, 24 comprise those portions of the pants 20, which when worn, wholly or partially cover or encircle the waist or mid-lower torso of the wearer. The crotch region 26 generally comprises that portion of the pants 20 which, when worn, is positioned between the legs of the wearer and covers the lower torso and crotch of the wearer. With additional reference to Figs. 2 and 3, the pair of swim pants 20 has a pair of laterally opposite side edges 36 and a pair of longitudinally opposite waist edges (broadly, longitudinal ends), respectively designated front waist edge 38 and back waist edge 39.

[0036] The illustrated pants 20 comprises a central absorbent assembly, generally indicated at 32, having a pair of laterally opposite front side panels 34 extending laterally outward at the front waist region 22 and a pair of laterally opposite back side panels 134 extending laterally outward at the back waist region 24. The central absorbent assembly 32 is illustrated in Figs. 2 and 3 as being generally rectangular. However, it is contemplated that the absorbent assembly 32 may be other than rectangular, such as hourglass shaped, T-shaped, I-shaped, and the like without departing from the scope of this invention.

[0037] Still referring to Figs. 1-3, the central absorbent assembly 32 comprises an outer cover 40 and a bodyside liner 42 (Figs. 1 and 3) attached to the outer cover in a superposed relationship therewith by adhesives, ultrasonic bonds, thermal bonds and/or other conventional attachment techniques. The liner 42 is suitably adapted, i.e., positioned relative to the other components of the pants 20, for contiguous relationship with the wearer's skin during wear. The absorbent assembly 32 also comprises an absorbent structure 44 (Fig. 3) disposed between the outer cover 40 and the bodyside liner 42 for absorbing liquid body exudates exuded by the wearer, and a pair of containment flaps 46 (Fig. 3) secured to the bodyside liner 42 for inhibiting the lateral flow of body exudates.

[0038] The central absorbent assembly 32 of the illustrated embodiment has longitudinal ends which form portions of the front and back waist edges 38 and 39, and opposite side edges which form portions of the side edges 36 of the swim pants 20 (Figs. 2 and 3). For further reference, arrows 48 and 49 depict the orientation of the longitudinal axis and the transverse or lateral axis, respectively, of the swim pants 20.

[0039] The front and back side panels 34, 134 are suitably frangibly connected to each other at laterally opposite side seams of the pants 20, such as by using adhesive, or by thermal or ultrasonic bonding, or by other conventional techniques, to define a three-dimensional pants configuration having a waist opening 50 (Fig. 1) and a pair of leg openings 52. The front and back side panels 34 and 134, upon wearing of the pants 20, thus comprise the portions of the training pants 20 which are positioned on the hips of the wearer. The front and back waist edges 38 and 39 of the training pants 20 are configured to encircle the waist of the wearer and together define the waist opening 50 (Fig. 1) of the pants. Portions of the side edges 36 of the pants 20 in the crotch region 26 generally define the leg openings 52 of the pants 20. In the alternative, the front and back side panels 34 and 134 can be permanently bonded together to form the three-dimensional configuration of the pants 20, or the side panels may be refastenably connected with one another, such as by suitable hook-and-loop type fasteners (not shown) without departing from the scope of this invention.

[0040] A flap elastic member 53 (Fig. 3) can be operatively joined with each containment flap 46 in any suitable manner as is well known in the art. The elasticized containment flaps 46 define a partially unattached edge which assumes an upright configuration in at least the crotch region 26 of the swim pants 20 to form a seal against the wearer's body. The containment flaps 46 can be located along the side edges 36 of the pants 20, and can extend longitudinally along the entire length of the absorbent assembly 32 or may only extend partially along the length of the absorbent assembly. Suitable constructions and arrangements for the containment flaps 46 are generally well known to those skilled in the art and are described in U.S.



Patent 4,704,116 issued November 3, 1987 to Enloe, which is incorporated herein by reference.

[0041] To further enhance containment and/or absorption of body exudates, the swim pants 20 also suitably includes a front waist elastic member 54 (Figure 3), a rear waist elastic member 56, and leg elastic members 58, as are known to those skilled in the art. The waist elastic members 54 and 56 can be operatively joined to the outer cover 40 and/or the bodyside liner 42 along the opposite waist edges 38 and 39, and can extend along a portion or all of the respective waist edges. The leg elastic members 58 can be operatively joined to the outer cover 40 and/or the bodyside liner 42 along the opposite side edges 36 of the pants 20 and positioned in the crotch region 26 of the swim pants. Each leg elastic member 58 has a front terminal point 63 and a back terminal point 65, which represent the longitudinal ends of the elastic gathering caused by the leg elastic members.

[0042] The flap elastic members 53, the waist elastic members 54 and 56, and the leg elastic members 58 can be formed of any suitable elastic material. As is well known to those skilled in the art, suitable elastic materials include sheets, strands or ribbons of natural rubber, synthetic rubber, or thermoplastic elastomeric polymers. The elastic materials can be stretched and adhered to a substrate, adhered to a gathered substrate, or adhered to a substrate and then elasticized or shrunk, for example with the application of heat, such that elastic retractive forces are imparted to the substrate.

[0043] The side panels 34, 134 can be permanently bonded along seams 66 to the central absorbent assembly 32 in the respective front and back waist regions 22 and 24. More particularly, as seen best in Figs. 2 and 3, the front side panels 34 can be permanently bonded to and extend

transversely outward beyond the side edges of the absorbent assembly 32 at the front waist region 22, and the back side panels 134 can be permanently bonded to and extend transversely outward beyond the side edges of the absorbent assembly at the back waist region 24. The side panels 34 and 134 may be bonded to the absorbent assembly 32 using attachment means known to those skilled in the art such as adhesive, thermal or ultrasonic bonding. Alternatively, the side panels 34 and 134 can be formed as an integral portion of a component of the absorbent assembly 32. For example, the side panels 34, 134 can comprise a generally wider portion of the outer cover 40, the bodyside liner 42, and/or another component of the absorbent assembly 32.

[0044] The side panels 34, 134 suitably, although not necessarily, comprise an elastic material capable of stretching in a direction generally parallel to the transverse axis 49 of the swim pants 20. Suitable elastic materials, as well as one process of incorporating elastic side panels into absorbent pants, are described in the following U.S. Patents: 4,940,464 issued July 10, 1990 to Van Gompel et al.; 5,224,405 issued July 6, 1993 to Pohjola; 5,104,116 issued April 14, 1992 to Pohjola; and 5,046,272 issued September 10, 1991 to Vogt et al.; all of which are incorporated herein by reference. In particular embodiments, the elastic material may comprise a stretch-thermal laminate (STL), a neck-bonded laminate (NBL), a reversibly necked laminate, or a stretch-bonded laminate (SBL) material. Methods of making such materials are well known to those skilled in the art and described in U.S. Patent 4,663,220 issued May 5, 1987 to Wisneski et al.; U.S. Patent 5,226,992 issued July 13, 1993 to Morman; European Patent Application No. EP 0 217 032 published on April 8, 1987 in the name of Taylor et al.; and PCT application WO 01/88245 in the name of

Welch et al.; all of which are incorporated herein by reference. Alternatively, the side panel material may comprise other woven or non-woven materials, such as those described later herein as being suitable for construction of the outer cover 40 and/or the bodyside liner 42; mechanically pre-strained composites; or stretchable but inelastic materials.

[0045] The outer cover 40 suitably comprises a material that is substantially liquid impermeable. For example, the outer cover 40 can be a single layer of liquid impermeable material, but more suitably comprises a multi-layered laminate structure in which at least one of the layers is liquid impermeable. One such laminate includes a liquid permeable outer layer and a liquid impermeable inner layer that are suitably joined together by laminate adhesive, ultrasonic bonds, thermal bonds, or the like. Suitable laminate adhesives, which can be applied continuously or intermittently as beads, a spray, parallel swirls, or the like, can be obtained from Bostik Findley Adhesives, Inc., of Wauwatosa, Wisconsin, U.S.A., or from National Starch and Chemical Company, Bridgewater, New Jersey U.S.A. The liquid permeable outer layer can be any suitable material and is desirably one that provides a generally cloth-like texture. The outer layer may also be made of those materials of which the liquid permeable bodyside liner 42 is made. While it is not a necessity for the outer layer to be liquid permeable, it is suitable that it provides a relatively cloth-like texture to the wearer.

[0046] The inner layer of the outer cover 40 can be both liquid and vapor impermeable, or it may be liquid impermeable and vapor permeable. The inner layer can be manufactured from a thin plastic film, although other flexible liquid impermeable materials may also be used. The

inner layer, or the liquid impermeable outer cover 40 when a single layer, prevents waste material from wetting articles, such as clothing, as well as the wearer and caregiver. The outer cover 40 is suitably sized (e.g., in length and width) larger than the absorbent structure 44 to extend outward beyond the periphery thereof. For example, the outer cover 40 may extend outward beyond the absorbent structure 44 periphery a distance in the range of about 1.3 centimeters to about 2.5 centimeters (about 0.5 to 1 inch).

[0047] The bodyside liner 42 is suitably compliant, soft-feeling, and non-irritating to the wearer's skin. The bodyside liner 42 is also sufficiently liquid permeable to permit liquid body exudates to readily penetrate through its thickness to the absorbent structure 44. A suitable bodyside liner 42 may be manufactured from a wide selection of web materials, such as porous foams, reticulated foams, apertured plastic films, woven and non-woven webs, or a combination of any such materials. For example, the bodyside liner 42 may comprise a meltblown web, a spunbonded web, or a bonded-carded-web composed of natural fibers, synthetic fibers or combinations thereof. The bodyside liner 42 may be composed of a substantially hydrophobic material, and the hydrophobic material may optionally be treated with a surfactant or otherwise processed to impart a desired level of wettability and hydrophilicity.

[0048] The bodyside liner 42 and outer cover 40 are suitably attached to one another. For example, the bodyside liner 42 may be directly attached to the outer cover 40 by affixing the bodyside liner 42 directly thereto, or it may be indirectly attached to the outer cover by affixing the bodyside liner to intermediate components which in turn are affixed to the outer cover. The bodyside liner 42 and the outer cover 40 can, for example, be attached to each other

along at least a portion of their periphery by adhesive, ultrasonic bonding, thermal bonding or other suitable attachment techniques known in the art.

[0049] The absorbent structure 44 is compressible, conformable and capable of absorbing and retaining liquid body exudates released by the wearer. It should be understood, for purposes of this invention, that the absorbent structure 44 may comprise a single, integral piece of material, or alternatively it may comprise a plurality of individual separate pieces of material which are layered or otherwise operatively assembled together.

[0050] In a particularly suitable embodiment, the absorbent structure 44 comprises a matrix of hydrophilic fibers, and more suitably cellulosic fluff, such as wood pulp fluff. One suitable pulp fluff is identified with the trade designation CR1654, commercially available from Bowater of Coosa Pines, Alabama, U.S.A., and is a bleached, highly absorbent sulfate wood pulp containing primarily soft wood fibers and about 16 percent hardwood fibers. As an alternative to wood pulp fluff, synthetic fibers, polymeric fibers, meltblown fibers, short cut homofil bicomponent synthetic fibers, or other natural fibers may be used without departing from the scope of this invention. It is also contemplated that the absorbent structure may, in some embodiments, further comprise superabsorbent material.

[0051] With reference now to Figs. 4 and 5, in accordance with one embodiment of the present invention, a pre-packaged absorbent article and sun protection accessories arrangement generally comprises an absorbent article, such as the swim pants 20 shown in Figs. 1-3, a sunscreen carrier, generally indicated at 202 and containing a sunscreen composition, and a packaging element, generally indicated at 204, arranged relative to each other for distribution

together as a single unit. The swim pants 20 are shown in Figs. 4 and 5 in a folded configuration with the side panels 34, 134 generally tucked between the front and back waist regions 22, 24 of the pants. However, the pants 20 may instead be unfolded or otherwise in a configuration other than the folded configuration shown in Figs. 4 and 5 and remain within the scope of this invention.

[0052] The sunscreen carrier 202 is shown in the form of a relatively small envelope, or packet 206 containing enough sunscreen composition for a single use. The packet 206 may be constructed of paper, plastic, foil, another suitable material or a combination thereof. Product information (not shown but substantially the same as product information 256 shown in the embodiment of Fig. 10), such as the product name, manufacturer, product description, content quantity, use instructions and the like may be imprinted on the packet 206. Alternatively, or additionally, the packet 206 may be constructed of a relatively transparent or translucent material so that the contents of the packet are visible through the packet.

[0053] The sunscreen composition may generally be any sunscreen composition intended for application to a person's skin to protect the skin against ultraviolet (UV) radiation. Suitable sunscreen compositions may comprise organic and/or inorganic materials. Such sunscreen compositions are well known in the art and will not be further described herein except to the extent necessary to set forth the present invention. Some examples of suitable sunscreen compositions are disclosed in U.S. Patent No. 6,309,626, issued October 30, 2001 to Raman; 6,395,269 issued May 28, 2002 to Fuller et al.; 6,432,389 issued August 13, 2002 to Hansenne et al.; and 6,440,402 issued August 27, 2002 to Gonzalez et al. The sunscreen composition may be delivered in any of a number of

forms, such as creams, foams, gels, lotions, milks, mousses, oils, sticks, tonics and the like. It is also understood that the sunscreen carrier 202 for the sunscreen composition may be in a form other than the packet 206, such as a tube, a pour bottle, a spray bottle, a wipe containing sunscreen composition, and the like without departing from the scope of this invention.

[0054] In the illustrated embodiment of Figs. 4 and 5, the packaging element 204 comprises a layer of adhesive 208 securing the sunscreen carrier 202 to the outer cover 40 of the folded swim pants 20. The adhesive 208 is suitably sufficiently tacky to hold the sunscreen carrier 202 on the swim pants 20 for distribution yet allow easy removal of the sunscreen carrier from the pants (e.g., without tearing or otherwise damaging the outer cover of the pants) when the sunscreen composition is to be used. For example, one suitable adhesive comprises a flexible self-sustaining backing coated with a stable viscous copolymer latex formed from monomers of (1) major amounts of certain alkyl acrylates, (2) minor amounts of certain emulsifier monomers, and (3) if desired, minor amounts of zwitterionic monomers, and the water evaporated from the latex to leave a tacky and pressure-sensitive adhesive. As an alternative example, the adhesive may suitably be a repositionable pressure-sensitive adhesive comprising from about 70% to about 99% solid, polymeric, acrylate, inherently tacky, infusible, solvent-insoluble, solvent-dispersible, elastomeric microspheres comprising at least one alkyl acrylate or alkyl methacrylate ester; and at least one polar monomer, and correspondingly, from about 30% to about 1% of a binder copolymer comprising an elastomeric polymeric backbone.

[0055] The adhesive 208 can be initially applied to the packet 206 and/or to the outer cover 40 of the swim pants 20

and then the packet and outer cover brought together to adhere the packet to the swim pants. It is also understood that the adhesive 208 may be applied in generally any pattern, such as a continuous stream, intermittent stream, spray, swirl, separated beads or other suitable patterns. While in the illustrated embodiment the sunscreen carrier 202 is adhered to the outer cover 40 of the swim pants 20, it is contemplated that the sunscreen carrier may instead be adhered to the liner 42 of the swim pants and disposed between the front and back waist regions 22, 24 in the folded configuration of the swim pants without departing from the scope of this invention.

[0056] Figure 6 illustrates an alternative embodiment in which the sunscreen carrier 202 comprises a tube 210 containing sunscreen composition. The tube 210 is sized to contain enough sunscreen composition for a single use and is adhered to the outer cover 40 of the swim pants 20 by adhesive 208, such as any of the adhesives described previously.

[0057] In another embodiment of an arrangement of the present invention, shown in Fig. 7, the sunscreen carrier 202 comprises a wipe 220 that contains sunscreen composition. The packaging element 204 of this embodiment generally comprises a cover sheet 222 sized to overlay the wipe 220 with a peripheral edge margin 224 of the cover sheet extending outward beyond the wipe to overlay the outer cover 40 of the swim pants 20. The cover sheet 222 is releasably secured to the swim pants 20 at the peripheral edge margin 224 of the cover sheet, such as by adhesive 208, so that the swim pants, wipe 220 and cover sheet are distributable as a single unit. The adhesive 208 is suitably any of the adhesives described previously herein.



[0058] The cover sheet 222 is suitably constructed of a plastic film. However, it is understood that the cover sheet 222 may instead, or may additionally, be constructed of foil, paper or other suitable materials without departing from the scope of this invention. The cover sheet 222 may have product information (not shown but substantially similar to the product information 256 shown in the embodiment of Fig. 10), such as product name, manufacturer, product description, content quantity, use instructions and the like imprinted thereon. Alternatively, or additionally, the cover sheet 222 may be relatively transparent, or translucent, so that the wipe 220 is visible through the cover sheet.

[0059] Figure 8 illustrates an alternative embodiment in which the sunscreen carrier 202 comprises a small bottle 230 containing a single use amount of sunscreen composition. The packaging element 204 comprises a sleeve 232 encircling the folded swim pants 20 and bottle 230 to hold the swim pants, bottle and sleeve together for distribution as a single unit. The sleeve 232 is suitably constructed of a plastic film. For example, a single strip of film may be wrapped around the swim pants 20 and bottle 230 and secured in place, such as by overlapping the film upon itself and securing the overlapping portion to the underlying portion by adhesive or other conventional bonding technique. Alternatively, the sleeve 232 may be fully formed prior to the folded swim pants 20 and bottle 230 being inserted there through. It is also contemplated that the sleeve 232 may be constructed of a heat-shrinkable material so that the sleeve may be heated and shrunk after being placed around the swim pants 20 and bottle 230 to more tightly hold the pants, bottle and sleeve together.

[0060] The sleeve 232 may have product information (not shown but substantially similar to the product information

256 shown in the embodiment of Fig. 10), such as product name, manufacturer, product description, content quantity, use instructions and the like imprinted thereon.

Alternatively, or additionally, the sleeve 232 may be relatively transparent, or translucent, so that the swim pants 20 and/or bottle 230 are visible through the sleeve. It is also understood that while in the illustrated embodiment of Fig. 8 the sunscreen carrier 202 is a bottle 230, the sunscreen carrier and the sunscreen composition therein may be any of those carriers and/or compositions described either previously or later herein.

[0061] The sleeve 232 is illustrated in Fig. 8 as having a width that is somewhat smaller than the length (e.g., the height as shown in Fig. 8) of the bottle 230. However, it is contemplated that the sleeve 232 may have a width sized substantially greater than the length of the sunscreen carrier 202 (e.g., the bottle 230) and may even extend the full length of the folded swim pants 20. It is also contemplated that the sleeve 232 may have a width that is smaller than is shown in Fig. 8 without departing from the scope of this invention.

[0062] Figure 9 illustrates another embodiment of the present invention in which the sunscreen carrier 202 is substantially similar to that of the illustrated embodiment of Figs. 4 and 5, i.e., in the form of a packet 206 containing sunscreen composition. However, it is understood that the sunscreen carrier 202 and sunscreen composition contained therein may be any of the carriers and/or compositions described previously or later herein.

[0063] The packaging element 204 of the illustrated embodiment of Fig. 9 is in the form of a wrap 240 that is closed about its periphery to fully enclose the swim pants 20 and packet 206 within an interior space 244 of the wrap. The

wrap 240 is suitably constructed of plastic, such as a plastic film, although the wrap may alternatively, or additionally, be constructed of paper or other suitable wrap materials. As an example, in one embodiment the wrap 240 may be formed from an opposed pair of plastic sheets that are secured together, such as by adhesive, thermal bonding or ultrasonic bonding, or other suitable technique, at peripheral edge margins 246 thereof along three sides to form a bag-like configuration having one open side. The swim pants 20 and packet 206 are positioned therein and the edge margins 246 along the remaining open side are secured together to enclose the swim pants and packet therein. Alternatively, the wrap 240 may include a hinged flap (not shown) or other closure to frangibly or releasably close the wrap. It is also contemplated that the wrap 240 may be constructed of a heat shrinkable material so that the wrap may be heated and shrunk after the swim pants 20 and packet 206 are enclosed therein.

[0064] The wrap 240 may have product information (not shown but similar to the product information 256 shown in the embodiment of Fig. 10), such as product name, manufacturer, product description, content quantity, use instructions and the like imprinted thereon. Alternatively, or additionally, the wrap 240 may be transparent, or translucent, so that the swim pants 20 and/or packet 206 are visible through the wrap. In the illustrated embodiment the packet 206 (e.g., the sunscreen carrier 202) is enclosed within the interior space 244 of the wrap 240 along with the swim pants 20 but is otherwise unsecured to the swim pants. However, it is understood that the packet 206 may be secured to the swim pants by an additional packaging element, such as by adhesive 208 as shown in Fig. 4 and described previously herein. It is also contemplated that the swim pants 20 may be enclosed

within the wrap 240 while the sunscreen carrier 202 is disposed exterior of the wrap and secured thereto by an additional packaging element, such as adhesive, without departing from the scope of this invention.

[0065] Figure 10 illustrates another embodiment in which a plurality of swim pants 20, each in its respective folded configuration, is enclosed within an interior space 254 of a single wrap 250 (broadly defining the packaging element 204) along with a sunscreen carrier 202 so that the swim pants, sunscreen carrier and wrap are distributable as a single unit. The wrap 250 is suitably substantially similar in construction to the wrap 240 illustrated in Fig. 9 and described previously herein, but sized sufficiently larger to enclose multiple swim pants 20. The sunscreen carrier 202 of the illustrated embodiment is a bottle 252 containing sunscreen composition in an amount sufficient for multiple uses. It is understood that the sunscreen carrier 202 and sunscreen composition therein may instead be substantially similar to any of the other carriers and/or compositions described previously or later herein, as long as the sunscreen carrier is sufficiently sized to contain enough sunscreen composition for multiple uses.

[0066] With reference now to Fig. 11, the packaging element 204 is illustrated therein in the form of a pail 260 having an interior space 262. The pail 260 is suitably of the type commonly taken to the beach for playing in the sand. One or more swim pants 20 (one is shown in Fig. 11) and at least one sunscreen carrier 202 (one is shown in Fig. 11 in the form of a bottle 252) are disposed within the interior space 262 of the pail such that the pail, swim pants and sunscreen carrier are distributable as a single unit. It is contemplated that the sunscreen carrier 202 may be secured to the swim pants 20, such as in the manner of any of the

embodiments of Figs. 4-9 described previously herein. It is also contemplated that the sunscreen carrier 202 and/or the swim pants 20 may instead, or may additionally, be secured within the pail 260, such as by being adhered to a bottom wall (not shown) or side wall 266 of the pail, to inhibit the sunscreen carrier and/or swim pants against falling out of the pail.

[0067] The pail 260 is suitably constructed of plastic or metal for repeated use. However, the pail 260 may instead be constructed of paper or other material whereby the pail is generally intended for disposal after a short duration, such as at the end of a day of playing at the beach. A closure (not shown), such as a lid or a suitable wrap, may cover the open top of the pail 260 to enclose the swim pants 20 and sunscreen carrier 202 in the pail for distribution. It is also understood that the sunscreen carrier 202 may be secured to an outer surface 268 of the side wall 266 of the pail 260, such as by adhesive, by a sleeve (not shown but similar to the sleeve 232 of Fig. 8) extending about the side wall 266 of the pail, or by other suitable securement techniques, without departing from the scope of this invention.

[0068] In alternative embodiment, the packaging element 204 may instead comprise a carrying bag 270 (e.g., a tote bag, diaper bag, beach bag, waist pouch, back pack, etc.), as shown in Fig. 12, or other suitable article commonly used to pack items taken to the beach or outdoor venues. The carrying bag 270 shown in Fig. 12 has a generally open top. However, it is understood that the carrying bag 270 may be closeable at the top (e.g., by zipper, hook-and-loop fasteners or other suitable fasteners) to substantially enclose the swim pants 20 and sunscreen carrier 202 within the bag for distribution. The bag 270 may be constructed of any suitable fabric, netting, plastic and the like, or it may

instead be constructed of a material (e.g., paper) intended for disposal after a short duration.

[0069] With particular reference now to Fig. 13, each of the arrangements shown in Figs. 4-12 and described previously herein may further comprise an ultraviolet (UV) indicator, generally indicated at 302 in Fig. 13, suitable for detecting UV radiation (in which instance the indicator may be otherwise sometimes referred to as a UV detector) or for determining the level of exposure to UV radiation (in which instance the indicator may be otherwise sometimes referred to as a dosimeter). As used herein, ultraviolet radiation generally refers to radiation in the range of about 100 to about 400 nanometers. In one embodiment, the UV indicator 302 suitably comprises a photochromic or photosensitive composition that changes color upon exposure to UV radiation. Such compositions are well known to those skilled in the art and will not be further described herein except to the extent necessary to describe the present invention. For example, photochromic and photosensitive UV indicators are described in U.S. Patent No. 5,581,090 (Goudjil), issued December 3, 1996; and U.S. Patent No. 6,132,681 (Faran et al.), issued October 17, 2000, the disclosures of which are incorporated herein by reference. It is contemplated that UV indicators other than those comprising a photochromic or photosensitive composition (e.g., other than those that change colors upon exposure) may be used without departing from the scope of this invention.

[0070] In the illustrated embodiment of Fig. 13, the swim pants 20, sunscreen carrier 202 and packaging element 204 are substantially the same as those illustrated in Fig. 4. The UV indicator 302 is shown in the form of a substrate 306 having a photochromic or photosensitive composition applied to or otherwise formed integrally with the substrate.

The UV indicator 302 is suitably permanently secured to the swim pants 20 by another packaging element, generally indicated at 304, such as adhesive 308 (e.g., in the manner of a sticker), for distribution together with the swim pants and sunscreen carrier 202 as a single unit. In this manner, the UV indicator 302 remains on the swim pants 20 during use. Alternatively, the UV indicator 302 may be releasably secured to the swim pants 20, such as by a less tacky adhesive 308, by a hook-and-loop fastener (not shown) or by other suitable releasable fastening techniques so that the UV indicator may be removed from the swim pants and placed elsewhere (e.g., on skin, clothing or other articles to be exposed to UV radiation) during use. Instead of being secured directly to the swim pants 20, the UV indicator 302 may be secured (permanently or releasably) to the sunscreen carrier 202 as shown in Fig. 14 by adhesive 308.

[0071] Figure 15 illustrates a pail 260 having substantially the same construction as that illustrated in Fig. 11, with a pair of swim pants 20 and a sunscreen carrier 202 disposed therein. A UV indicator 302 similar to that shown in Figs. 13 and 14 is secured (permanently or releasably) to the outer surface 268 of the pail 260 for distribution with the pail, swim pants 20 and sunscreen carrier 202 as a single unit. For example the UV indicator may be secured to the outer surface 268 of the pail 260 by adhesive (not shown), by hook-and-loop fasteners (not shown) or by other suitable fastening techniques.

[0072] It is also contemplated that in some embodiments the UV indicator 302 may be formed integrally with the packaging element 204. For example, the cover sheet 222 of the embodiment of Fig. 7, the sleeve 232 of the embodiment of Fig. 8, the wrap 240 of the embodiment of Fig. 9, the wrap 250 of the embodiment of Fig. 10, the pail 260 of the

embodiment of Fig. 11 and the carrying bag 270 of the embodiment of Fig. 12 may be constructed in part of a photochromic or photosensitive composition. Alternatively, or additionally, the UV indicator 302 may be formed integrally with the swim pants 20, such as by forming one or more components of the swim pants (e.g., the outer cover 40) from a photochromic or photosensitive substance. The UV indicator 302 may also, or may instead, be formed integrally with the sunscreen carrier 202 and remain within the scope of this invention.

[0073] Figure 16 illustrates a pail 260, swim pants 20 and sunscreen carrier 202 substantially as shown in Fig. 11 with additional accessories disposed within the pail for distribution with the swim pants and sunscreen carrier 202 as a single unit. For example, a pair of sunglasses 282 and a hat 284 (shown in a folded configuration) is disposed within the pail 260.

[0074] When introducing elements of the present invention or the preferred embodiment(s) thereof, the articles "a", "an", "the", and "said" are intended to mean that there are one or more of the elements. The terms "comprising," "including", and "having" are intended to be inclusive and mean that there may be additional elements other than the listed elements.

[0075] As various changes could be made in the above constructions without departing from the scope of the invention, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.